

Work Order ID 142089

Wednesday, February 24, 2016 11:26:55 AM

142089

U/R

Page 1

Item ID: D412-596-203 Accept *N900040100* Setup Start *NS1*
 Revision ID: URF 14-644, URF 15-561 Stop *NS2*
 Item Name: Stainless Steel Aft Crosstube - Extended Height 39"
 Start Date: 3/21/2016 Start Qty: 1.00 *1* Cust Item ID:
 Required Date: 3/11/2016 Req'd Qty: 1.00 *1* Customer:
 Reference: 4/08/2016

Approvals: Process Plan: MLS Date: FEB 24 2016 Tooling: Date: Run Start *NR1*
 QC: Date: SPC (Y/N): Date: Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D412-596-203	B U/R : OK								MLJ JUN 15 2016
100	Document Control	0.00							
100	DOCUMENT CONTROL								
DC	Memo	0.00							
Doc.Control -USB or Paperwork	Photocopy bluefile & type labels per PPPD412-596-203		CHG001						
									DAS 27 9-89
110	BENDING MACHINE - CROSSTUBES	0.00							JUN 15 2016
110									
CNC Bend 2	Memo	0.05							
CNC Alpha 160 Bender	Bend tube as per Dwg D412-596-203 using CNC bender program _____ and Folio FT _____								
	****USE (4) DT9824 SHIM BLOC TO CHECK STRAIGHTNESS****								
127	QC15- Crosstube Dimensional Check	0.00							
127									
QC	Memo	0.00							
Quality Control	***MARK CUT LINES***								

D412-5 6-203/ 42089

DAS 38 9-89
 APR 14 2016

Work Order ID 142089

Wednesday, February 24, 2016 11:26:55 AM

142089

Page 2

Item ID: D412-596-203 Accept ***N900040100*** Setup Start ***NS1***
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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
128		0.00							
128									
Crosstubes									
Crosstubes									
	Memo	0.02							
	CUT TUBE AT HEIGHT ON FAI SHEET								
	VERF HEIGHT <u>36.13</u> BY QC 15 LEVEL INSPECTOR								
	VERF TWIST <u>0.673</u> BY QC15 LEVEL INSPECTOR								
130		0.00							
130									
Crosstubes									
Crosstubes									
	Memo	0.04							
	1- Engrave Part # and Batch # as per Dwg D412-596-203								
	2-Remove all marks from tube within limits of D412-596-203 DWG.								
140		0.00							
140									
QC									
Quality Control									
	Memo	0.00							

Acceptable limit
DAS
12
9-89 16/5/24

D
4
9-89
DAS
47
9-89

16-06-08

DAS
38
9-89
QC6- Inspect dimensions to drawing
Qc5

DAS
38
9-89

JUN 08 2016

Work Order ID 142089

Wednesday, February 24, 2016 11:26:55 AM

142089

Page 3

Item ID: D412-596-203 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: URF 14-644, URF 15-561 Stop ***NS2***
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Start Date: 2/24/2016 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 3/11/2016 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
174	Outsource process - NDT per QSI038 4.1	0.00							DAS 13 9-89
174									
Outsource2	Memo	3.00							

Outsource process - NDT

ISSUE P/O TO ACCUREN: 32647

176	Receive & Inspect for Damage & Mat'l Certs	0.00
-----	--	------

176		
Packaging	Memo	0.00

Packaging

178	QC5- Inspect part completeness to step on W/O	0.00
-----	---	------

178		
QC	Memo	0.00

Quality Control

1x 8016-6-81 2B
16-06-14

Work Order ID 142089

Wednesday, February 24, 2016 11:26:55 AM

142089

Page 4

Item ID: D412-596-203 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: URF 14-644, URF 15-561 Stop ***NS2***
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 Required Date: 3/11/2016 Req'd Qty: 1.00 ***1*** Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
180	SprayPaint	0.00				1			DAS 41 9-89
180									16-6-10
SprayPaint	Memo	0.01							
Spray Painting	***USE AXALTA 230S PRE-TREATMENT AS PER QSI005*** AXALTA BATCH: 132474 132474 1-Prime inside & outside crosstube as per QSI 005 4.2 BATCH: 134754 2- After painting remove masking and apply matte clear coat per QSI005 4.2 BATCH: 133641 3- MASK UNDERSIDE OF CROSSTUBE AS SHONE ON DWG BEFORE PAINTING 4 -Paint Outside of Tube as per Dart QSI 005 4.2 BATCH: 134811								
190	QC14- Inspect Spray Paint	0.00							
190									
QC	Memo	0.00							
Quality Control									

RB
 16-06-14

142089

Page 5

N900040100

Setup Start *NS1*

Stop *NS2*

Stop *NS2*

Cust Item ID:

Customer:

Reference:

Run Start *NR1*

Stop *NR2*

**Insp.
Stamp**

0.00

200

Crosstubes

0.03

Crosstubes

Crosstubes

Memo

1- Install center support using scoth-weld DP460 per QSI 015, as per DWG. note 12.

A/R scoth-weld DP460 BATCH #: 132504

2- Install clamp with rubber cushion as per DWG. note 13

3- Abrade mating surfaces of support and crosstube with 400 grit sandpaper, clean the area with 4105S wash 'n' wipe

4- ****IF NOT ALREADY PRESENT ON CHAFFING SHIELD.**** Apply a thin coat of proseal 890 per QSI 015 on inside concave surface of chafing shield and let cure per manufacturer's instructions. Install prosealed chafing shield onto crosstube by applying a thin coat of proseal 890 onto crosstube. Be sure to eliminate any air gaps.

A/R Proseal 890 Batch: 134500

5- Install supports clamps using DT Andy as per Dwg D412-596-203, Torque clamps on support to 80-100 IN-LBS. Torque clamps on chafing shield to 40-50 IN-LBS.

START CURE TIME: 16-6-13 FINISH CURE
TIME: 16-6-14

PRIOR TO PACKAGING RE-CHECK TORQUE ON CLAMPS AFTER CURED FOR 24H.

Work Order ID 142089

Wednesday, February 24, 2016 11:26:55 AM

142089

Page 6

Item ID: D412-596-203 Accept *N900040100* Setup Start *NS1*
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 Start Date: 2/24/2016 Start Qty: 1.00 *1* Cust Item ID:
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 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start *NR1*
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
210	QC5- Inspect part completeness to step on W/O	0.00							
210									
QC	Memo	0.00							
Quality Control	PRIOR TO PACKAGING RE-CHECK TORQUE ON CLAMPS AFTER CURED FOR 24H.								16-06-04
240		0.00							
240	Packaging								
Packaging	Memo	0.00							
Packaging	Identify and pack for shipping as per PPPD412-596-203								
	Location: _____								
	PPP Rev: _____								
250	QC21- Final Inspection - Work Order Release	0.00							
250									
QC	Memo	0.00							
Quality Control									

DAS
28
9-89

DAS
27
9-89

JUN 15 2016

ML5

JUN 15 2016

ML5 JUN 15 2016

Picklist Print

Wednesday, February 24, 2016 11:26:58 AM

Page 1

Work Order ID: 142089

142089

Parent Item: D412-596-203

D412-596-203

Parent Item Name: Stainless Steel Aft Crosstube - Extended Height 39"

Start Date: 2/24/2016

Required Date: 3/11/2016

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP REV:A NEW ISSUE JFS 13/03/22 VERIFY BY:DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D3595-063-530		Manufactured	No				Each	38.0000		2			
D3595-063-530									**				
Rubber Cushion 0.63" wide x 5.30" Long													
				<u>Location</u>				<u>Loc Qty</u>	<u>Loc Code</u>				
				FG				1					
				82656				1					
				LG051				1					
				132515				1					
				LG052				36					
				138921				36					
D4909-1		Manufactured	No				Each	9.0000		1			
D4909-1									**				
Support													
				<u>Location</u>				<u>Loc Qty</u>	<u>Loc Code</u>				
				LG053				9					
				135507				5					
				140154				4					
D4910-1		Manufactured	No				Each	17.0000		2			
D4910-1									**				
Chaffing Shield													
				<u>Location</u>				<u>Loc Qty</u>	<u>Loc Code</u>				
				LG053				17					
				139520				8					
				141315				9					

DAS
41
9-89

16-6-13

DAS
41
9-89

16-6-13

DAS
41
9-89

16-6-13

Picklist Print

Wednesday, February 24, 2016 11:26:58 AM

Page 2

Work Order ID: 142089

142089

Parent Item: D412-596-203

D412-596-203

Parent Item Name: Stainless Steel Aft Crosstube - Extended Height 39"

Start Date: 2/24/2016

Required Date: 3/11/2016

Start Qty: 1.00

Required Qty: 1.00

MS21920-26

Purchased

No

Each

27.0000

4

DAS

41

9-89

16-6-13

MS21920-26

Clamp

**

Location

Loc Qty

Loc Code

LG057

27

M132045

1

M133234

2

M133483

4

M133577

20

4

MS21920-28

Purchased

No

Each

92.0000

2

DAS

41

9-89

16-6-13

MS21920-28

Clamp

**

Location

Loc Qty

Loc Code

FG

1

105884

1

LG051

1

M132169

1

LG057

90

M130400

50

M133090

2

M134130

38

2

D412-596-203TRN

Manufactured

No

110

Each

4.0000

1

1

D412-596-203TRN

Crosstube Aft Extended Turning Detail

**

Location

Loc Qty

Loc Code

LG003

4

135132

1

135133

1

135134

1

135135

1

1

142070

1

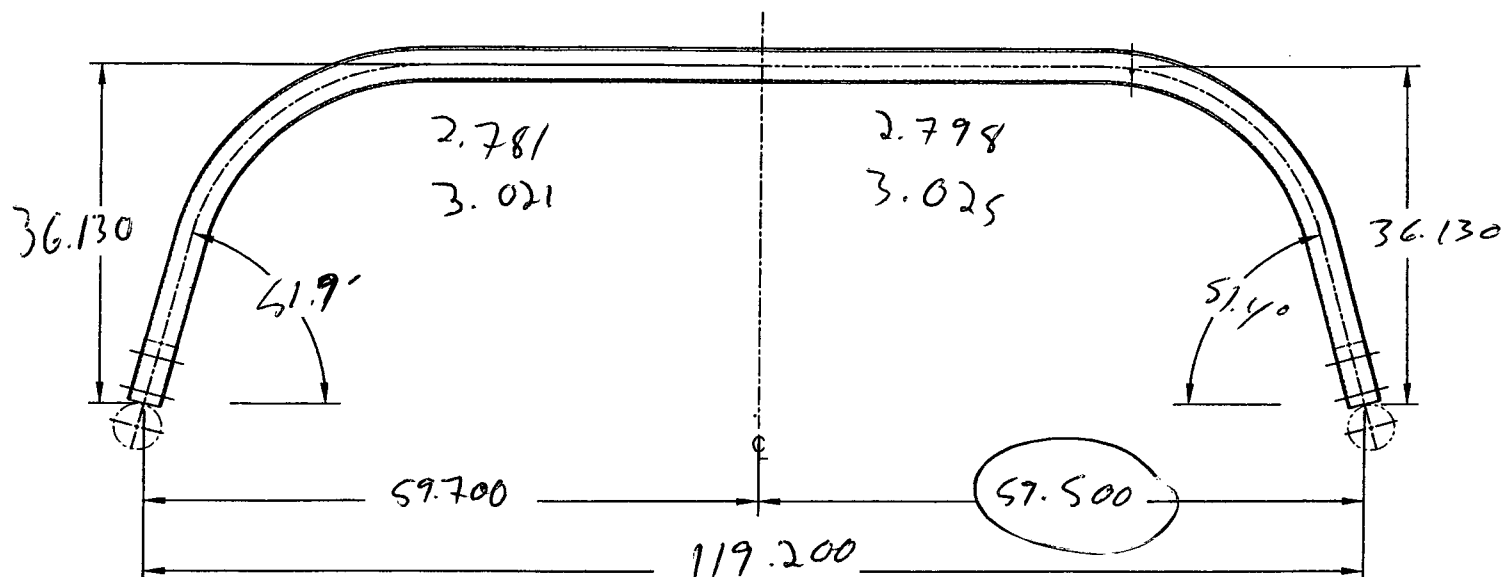
Wednesday, February 24, 2016 11:26:58 AM

Shop Packet Print

Page 2

DART AEROSPACE LTD	Work Order: 142089
Description:	Part Number: D412596-203
Inspection Dwg: D412-596-203 Rev: B	Page 1 of 1

Required Dimension	Min	Max
Height	35.63	36.13
1/2 Span	57.56	59.82
Angle	49	52
Total Span	117.13	119.63
Bending Passes	8	
Crushing		7%



	Side A	Side B
Bending Passes	15	13
Crushing	4.1%	3.9%
Comments		
DAS		
12		
9-89		
16/4/14		

QC15 Inspection	38
Date	16/04/14

Rev	Date	Change	Revised by	Approved
A		New Issue		
B	06.09.19	Reformat; QC level revised	KJ/JM	
C	07.02.06	Reformat	KJ/JM	
D	12.02.15	Added bending passes and crushing	KJ	
E	12.03.07	Revised comments table	KJ	

Item	Qty -203	Part Number	Description
1	X	D412-596-203	CROSSTUBE ASSEMBLY (412 HI HI AFT)
2	1	D8020-170	CROSSTUBE MATERIAL
3	2	D3595-063-530	RUBBER CUSHION
4	1	D4909-1	SUPPORT
5	2	D4910-1	CHAFING SHIELD
7	4	MS21920-26	CLAMP
8	2	MS21920-28	CLAMP
9	A/R	SCOTCH-WELD DP460	EPOXY ADHESIVE, 3M SCOTCH-WELD
10	A/R	PROSEAL 890	SEALANT

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D8020-170
FINISHED LENGTH = 151.38±0.060 (BEFORE BENDING/TRIMMING)
- 2) FINISH: PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
MASK UNDERSIDE OF CROSSTUBE AS SHOWN (ZN B6-2, HATCHED AREA)
PAINT OUTSIDE PER DART QSI 005 4.2
AFTER PAINTING, REMOVE MASKING AND APPLY MATTE CLEAR COAT PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART P/N "D412-596-203" AND B/N ON INSIDE OF CUFF PER DART QSI 044 8.4 (VIBRATING STYLUS)
- 7) WEIGHT: 191.1 lb RAW MATERIAL, 118.3 lb AFTER MACHINING
118.0 lb FINISHED WEIGHT

8) PART IS SYMMETRIC ABOUT CENTERLINE.

9) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.

BENDING

- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 7% (BASED ON O.D.) IN LOWER HALF OF R35 BEND AND 6% (BASED ON O.D.) ON REMAINING TUBE.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038. TO BE PERFORMED AFTER FINAL POST-BEND GRINDING. ANY ADDITIONAL GRINDING REQUIRES ANOTHER LPI INSPECTION.

ASSEMBLY

- 12) INSTALL D4909-1 CENTER SUPPORT USING A 0.04" TO 0.07" THICK LAYER OF SCOTCH-WELD DP460 PER QSI 015.
- 13) INSTALL MS21920-28 CLAMPS WITH D3595-063-530 RUBBER CUSHIONS TO SECURE THE D4909-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT.
- 14) IF NOT ALREADY PRESENT ON CHAFING SHIELD, APPLY A THIN COAT OF PROSEAL 890 ON INSIDE CONCAVE SURFACE OF D4910-1 CHAFING SHIELD AND LET CURE PER MANUFACTURER'S INSTRUCTIONS. INSTALL PROSEALED D4910-1 CHAFING SHIELD ONTO CROSSTUBE BY APPLYING A THIN COAT OF PROSEAL 890 ONTO CROSSTUBE. BE SURE TO ELIMINATE ANY AIR GAPS.
- 15) TORQUE CLAMPS ON D4909-1 SUPPORT 80 TO 100 IN-LB. TORQUE CLAMPS ON D4910-1 CHAFING SHIELD 40 TO 50 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER ADHESIVES HAVE CURED FOR 24 HOURS.

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 142089 MLC

16-02-24

UNDER REVIEW OK
11/17/16
JRF 14-601

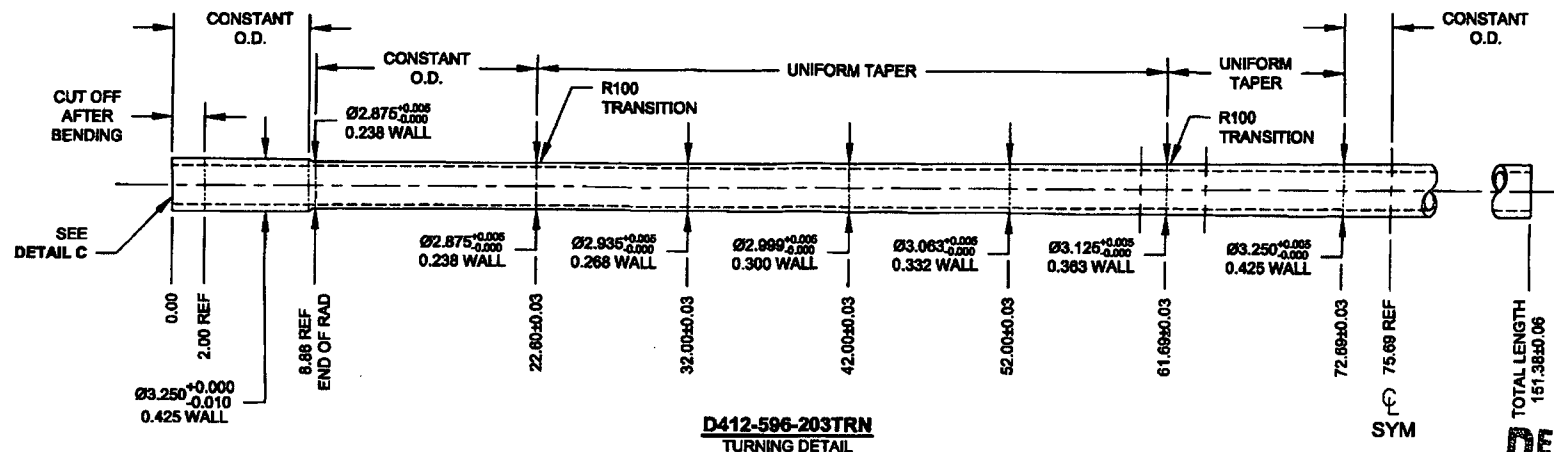
UNDER REVIEW

15/19/23
JRF 15-561

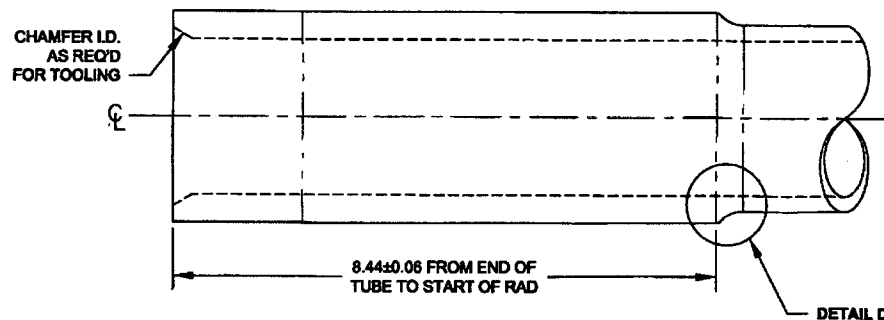
RELEASED
2013-08-06
JMP

B	ADD INSPECTION WINDOW (ZN C8-1, B6-2)	CP	13.06.16
A	NEW ISSUE	CP	13.03.13
REV.	DESCRIPTION	BY	DATE
DESIGN			
DRAWN			
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	13.06.16		

DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWING NO. D412-596-203	REV. 8 SHEET 1 OF 4
TITLE CROSSTUBE ASSY (412 HI HI AFT)	SCALE NTS
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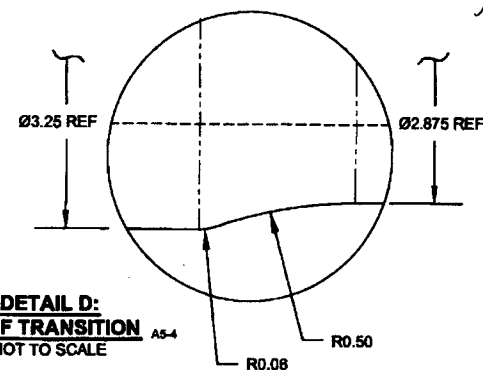


D412-596-203TRN
TURNING DETAIL



DETAIL C:
CUFF TRANSITION CS-4
SCALE 4X

DETAIL D:
CUFF TRANSITION AS-4
NOT TO SCALE



UNDER REVIEW

4/15/16

DESIGN		DART AEROSPACE LTD	
DRAWN		HAWKESSBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. B
MFG. APPR.		D412-596-203	SHEET 4 OF 4
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE ASSY (412 HI HI AFT)	NTS
DATE	13.06.16	COPYRIGHT © 2015 BY DART AEROSPACE LTD	
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OK 4/14/16
UNDER REVIEW

RELEASED
2013-08-06



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID **PO32647**

Purchase Order Date 6/8/2016

PO Print Date 6/8/2016

Page Number 1 of 4

Order From :
SKYSERVICE
6120 MIDFIELD ROAD
MISSISSAUGA, ONTARIO L5P 1B1
CANADA

VC-SKY001

Ship To : DART AEROSPACE LTD
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA



Contact Name
Vendor Phone 905-678-5636

Ship To Contact
Ship To Phone
Ship Via: Delivered
Ship Acct:

Buyer Chantal Lavoie
Customer POID
Customer Tax # 10127-2607
Terms Net 30
Currency CAD
FOB FCA - (Free Carrier)

Line Nbr	Reference Vendor Part Number Line Comments Delivery Comments	Description/ Mfg ID	Req Date/ Taxable Promise Date	CD	Req Qty/ Unit of Measure	PO Unit Price	Extended Price
1	71401-45	PROCUREMENT QUALITY CLAUSES	6/8/2016 No 6/8/2016		1.00 ✓	\$0.00	\$0.00
	Procurement Quality Clauses A005 right of entry A012 chemical and physical test report A016 personnel qualification A017 raw material identification (as applicable) A026 certification of material conformance A041 quality management system A042 dart notification by supplier A043 retention of quality documents						

Line Total: \$0.00

2	142089	D412-596-203 CROSSTUBE	6/8/2016 Yes 6/8/2016		1.00 ✓	\$112.50	\$112.50
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LIQUID PENETRANT INSPECTION AS PER QSI 038 OR
LPI AS PER ASTM 1417 LEVEL 2

Sp/6-6-8

Note:

6/8/2016

**skyservice****Work Order Traveler**

Sky Service F.B.O. Inc.

DOT APP 53-89 / EASA 145.7142 / BDA AMO 385

WO #: MWO28523	Customer: Dart Aerospace Ltd.	Dept: NDT YUL	Reference: 32647
Descr:	PN:	S/N:	Qty: 1
Make:	Model:	Reg:	A/C S/N:
TSN:	CSN:	TSO:	
Task: UNSCHEDULED			Sequence: 1

Work Required:

CARRY OUT NDT ON 8 CROSSTUBES AS PER PO32647

4 AFT CROSSTUBES, ITEM ID# D119-796-241, WORK ORDERS ID# 145283, 145284, 145285, 145286

3 FWD CROSSTUBES, ITEM ID# D119-796-141, WORK ORDERS ID# 145490, 145491, 145492

1 STAINLESS STEEL AFT CROSSTUBES, ITEM ID# D412-596-203, WORK ORDER ID# 142089

Action Taken:						Date:	Initial/Stamp:
LPI C/O IAW ASTM E-1417M-13 ***NO CRACK FOUND*** PEN. ZL-56, MPO13600, UV M-20141, CLEANER SKC-S MPO13923, DEV. MPO11715						JUN 08 2016	
Description	Location	P/N	Qty	Batch	S/N Off	S/N On	

Sp/16-6-8

I certified that the maintenance described above has been performed in accordance with the applicable standard of airworthiness.

Signature:	ACA/SCA Stamp 	Date: JUN 08 2016
Name: RAFIK MELIKIAN		